AMENDMENTS TO THE CLAIMS

Claim 1 (Currently amended): A machine for performing machining operations on a work-piece comprising:

a carriage;

~~a robotic arm mounted on said carriage, said arm having~~ a movable head containing a tool for performing the machining operations on the work-piece;

a laser position determination system ~~for determining~~ operable to determine the ~~actual~~ spatial relationship of ~~said~~ the carriage and ~~said~~ the work-piece and providing a first signal representative thereof and to further ~~determining~~ determine the spatial relationship of ~~said~~ the head to the work-piece during actual machining operations on the work-piece and ~~providing~~ to provide a second signal representative thereof;

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a computer ~~having a computer program providing~~ processor operable to provide a third signal to the ~~robotic arm~~ movable head for machining the work-piece based on a predetermined spatial relationship between ~~said~~ the carriage and the work-piece and ~~for receiving~~ to receive the first and second signals and ~~adjusting~~ to adjust the third signal based on the actual spatial relationship between the carriage and the work-piece prior to machining operations ~~and said head and the work piece during machining operations~~.

Claim 2 (Original): The machine as set forth in claim 1 wherein ~~said~~ the carriage is portable.

Claim 3 (Currently amended.): The machine as set forth in claim ~~2~~ 1 wherein ~~said~~ the laser position determination system includes:

a laser transceiver system;

at least one first laser target mounted on ~~said~~ the carriage;

at least one second laser target mounted on the work-piece; and

at least ~~on~~ one third laser target mounted on ~~said~~ the head.

KOESTNER BERTANI LLP
18662 MACARTHUR BLVD
SUITE 400
IRVINE, CA 92612
TEL (949) 251-0210
FAX (949) 251-0260

Claim 4 (Original): The machine as set forth in claim 3 wherein the carriage includes means to lock the machine in a position in proximity to the work-piece.

Claim 5 (Currently amended): The machine as set forth in claim 4 3 wherein ~~said~~ the laser position determination system includes a ~~single~~ laser transceiver assembly adapted to track ~~said~~ the at least one first, second and third laser target.

Claim 6 (Currently amended): The machine as set forth in claim 1, or 2, or 3, or 4, wherein ~~said~~ the laser position determination system ~~for determining~~ is operable to determine the ~~actual~~ spatial relationship of the work-piece during the machining operations.

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Claim 7 (Currently amended): The machine as set forth in claim 6 wherein ~~said~~ the laser ~~transceiver~~ position determination system comprises:

a first laser transceiver assembly for tracking ~~said~~ the at least one target mounted on ~~said~~ the carriage;

a second laser transceiver assembly for tracking ~~said~~ the at least one laser target mounted on the work-piece; and

a third laser transceiver assembly for tracking ~~said~~ the at least one laser target mounted on ~~said~~ the head.

Claim 8 (Currently amended): The machine as set forth in claim ~~4~~ 1 wherein ~~said~~ the laser ~~transceiver~~ position determination system comprises:

a first laser transceiver assembly for tracking ~~said~~ an at least one target mounted on ~~said~~ the carriage ~~and said carriage~~; and

a second laser transceiver assembly for tracking ~~said~~ an at least one laser target mounted on the work-piece.

Claim 9 (Currently amended): A computer controlled ~~machine for performing machining operations, on a work-piece, the machine having~~ machining system comprising:

a carriage with a movable head ~~containing a tool~~ for performing ~~the~~ machining operations on ~~the~~ a work-piece, ~~the computer having~~ and

a computer program for providing ~~first~~ signals to the head ~~for controlling the movement thereof~~ to move the head to specific spatial relationships with the

KOESTNER BERTANI LLP
18662 MACARTHUR BLVD
SUITE 400
IRVINE CA 92612
TEL (949) 251-0250
FAX (949) 251-0260

work-piece ~~so that the tool can perform the machining operations, the machine comprising~~:

a laser position determination system operable to:

~~for determining the~~ determine a ~~actual~~ spatial relationship ~~of~~ between the carriage ~~to~~ and the work-piece, and provide a first signal representative thereof;

~~and to~~ continuously determine ~~the~~ a spatial relationship of the head to the work-piece during ~~the performance of~~ actual machining operations and provide ~~providing~~ a second signal indicative ~~of the actual position~~ there of; and

~~the computer program adapted to~~ compare ~~said~~ the second signal to the first signal and to adjust the first signal so that the head is positioned ~~to the specific spatial relationships~~ based on the actual spatial relationship between the carriage and the work-piece prior to machining operations and between the head and the work-piece during machining operations

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Claim 10 (Original). The machine as set forth in claim 9 wherein the carriage is portable.

Claim 11 (Currently amended): The machine as set forth in claim 10 wherein ~~said~~ the laser position determination system includes:

a laser transceiver system;

at least one ~~first~~ laser target mounted on the machine;

at least one laser target mounted on the work-piece; and

at least one laser target is mounted on the head.

Claim 12 (Original): The machine as set forth in claim 11 wherein the carriage includes means to lock the machine in a position in proximity to the work-piece.

KOESTNER BERTANI LLP
18662 MACARTHUR BLVD
SUITE 400
IRVINE, CA 92612
TEL. (949) 251-0260
FAX (949) 251-0260

Claim 13 (Currently amended): The machine as set forth in claim 9, or 10, or 11, or 12, wherein:

the laser position determination system also determines the spatial relationship of the work-piece during machining operations and provides a third signal representative thereof; and

the computer ~~program adapted to also~~ executable logic instructions are operable to compare ~~said~~ the third signal to the first signal and to adjust the first signal.

Claim 14 (Currently amended): A method of increasing the accuracy of a machine ~~for performing machining operations on a work-piece, the machine having~~ that includes a carriage with a robotic arm, the robotic arm having a head ~~containing a tool for performing~~ the including a tool that performs machining operations on ~~the~~ a work-piece, the head movable to a computed spatial relationships to the work-piece directed by a first signal from ~~the~~ a computer based on a predetermined spatial relationship between the carriage and work-piece, the method comprising ~~the steps of~~:

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~~Determining~~ determining the actual spatial relationship between the carriage and the work-piece prior to machining operations and providing a second signal representative thereof;

continuously determining ~~the actual~~ a spatial relationship between the head and work-piece during the performance of machining operations and providing a third signal indicative of the actual spatial relationship ~~therebetween~~ there between; and

adjusting the first signal based on the difference between the first ~~and~~ signal and the second and third signals such that the head remains in the computed spatial relationships to the work-piece.

Claim 15 (Currently amended): The method as set forth in claim 14, including ~~the step of~~ determining the ~~actual~~ spatial relationship between the carriage and ~~of~~ the work-piece during machining operations and providing a fourth signal representative thereof; and ~~during the step of additionally~~ adjusting the first signal based on the difference between the first and ~~forth~~ fourth signals such that the head remains in the computed spatial relationships to the work-piece with this adjustment continuously accomplished during ~~machiningoperations~~ machining operations.

KOESTNER BERTANI LLP
18662 MACARTHUR BLVD
SUITE 400
IRVINE, CA 92612
TEL (949) 251-0250
FAX (949) 251-0260

Claim 16 (Currently amended): The method as set forth in claim 15 wherein ~~said steps of~~ determining the ~~actual~~ spatial relationship between the carriage and the work-piece and providing a fourth signal representative thereof and continuously determining the ~~actual~~ spatial relationship between the head and the work-piece during the performance of machining operations and providing a third signal indicative of the ~~actual position~~ spatial relationship between the head and the work-piece, and ~~the step of~~ additionally adjusting the first signal based on the difference between the first and ~~forth~~ fourth signals such that the head remains in the computed spatial relationships to the work-piece with this adjustment continuously accomplished during machining operations ~~are~~ is accomplished by means of a laser position determination system.

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Claim 17 (Currently amended): A machine for performing machining operations on a work-piece comprising:

a portable carriage;

a robotic arm mounted on ~~said~~ the carriage, ~~said~~ the robotic arm having a head ~~for mounting a tool~~ for machining the work-piece;

a laser position determination system comprising:

at least one first laser target mounted on ~~said~~ the work-piece;

at least one second laser target mounted on ~~said~~ the carriage;

at least one third laser target mounted on ~~said~~ the head; and

a laser transceiver for determining the spatial relationship of ~~said~~ the carriage, work-piece, and ~~said~~ the head during machining operations, respectively, and to provide output signals representative thereof; and

a computer having a first part of a computer program for machining the work-piece with ~~said~~ a tool based on a preset spatial relationship between ~~said~~ the carriage and the work-piece, ~~said computer having~~ a second part of ~~said~~ the computer program adapted to adjust ~~said~~ the first part of the ~~said~~ computer program in response to ~~said~~ the output signals such that ~~said~~ the head is properly positioned during the machining

KOESTNER BERTANI LLP
18662 MACARTHUR BLVD
SUITE 400
IRVINE, CA 92612
TEL (949) 251-0250
FAX (949) 251-0260

operations should ~~said~~ the work-piece or ~~said~~ the robotic arm introduce positional errors.

Claim 18 (Currently amended): A machine ~~for performing machining operations on a work-piece~~ comprising:

a portable carriage;

a robotic arm mounted on ~~said~~ the carriage, ~~said~~ the robotic arm having a head ~~for mounting a tool~~ for machining ~~the~~ a work-piece;

a laser position determination system comprising:

at least one first laser target mounted on ~~said~~ the work-piece;

at least one second laser target mounted on ~~said~~ the carriage;

at least one third laser target mounted on ~~said~~ the head; and

first, second and third laser transceiver assemblies for directing laser beams at ~~said~~ the at least one first, second and third ~~at least~~ one targets respectively and to provide first, second and third signals representative of spatial relationships of ~~said~~ the carriage, work-piece, and ~~said~~ the head during machining operations, respectively; and

a computer having a first part of a computer program for machining the work-piece with ~~said~~ a tool based on a preset spatial relationship between the carriage and the work-piece, ~~said computer having~~ a second part of ~~said~~ the computer program adapted to adjust ~~said~~ the first part of ~~said~~ the computer program in response to ~~said~~ the first, second and third signals such that ~~said~~ the head is properly positioned during the machining operations should ~~said~~ the work-piece or ~~or said~~ the robotic arm introduce positional errors.

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Claim 19 (New): The machine as set forth in claim 1, further comprising a robotic arm mounted on the carriage upon which the movable head is mounted.

KOESTNER BERTANI LLP
18662 MACARTHUR BLVD.
SUITE 400
IRVINE, CA 92612
TEL (949) 251-0250
FAX (949) 251-0260